Trend Study 6-12-01

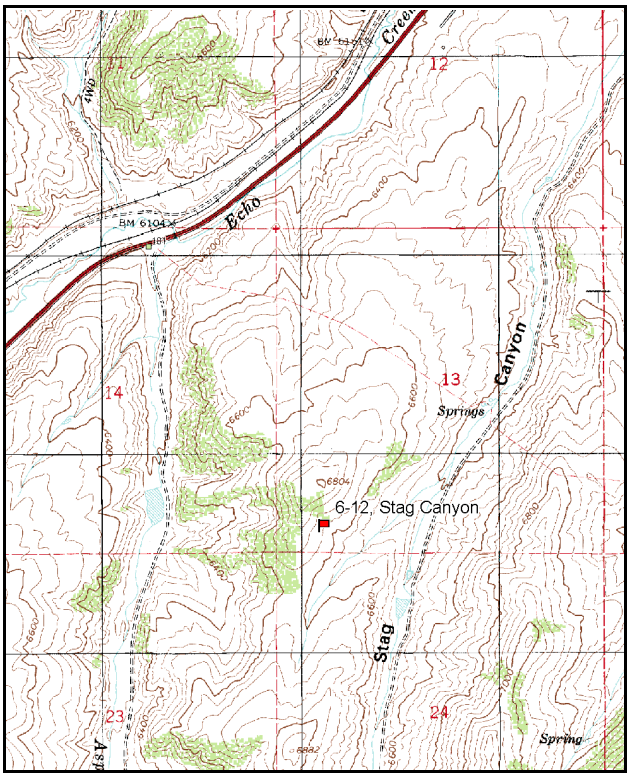
Study site name: Stag Canyon . Vegetation type: Big sagebrush .

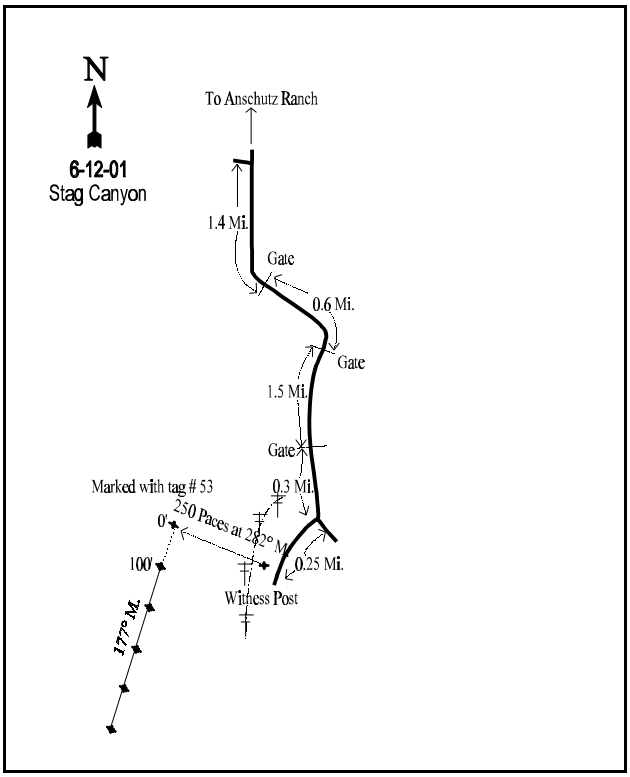
Compass bearing: frequency baseline 177 degrees magnetic.

Frequency belt placement: Line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

Take exit # 185 on I-80, up Echo Canyon and turn right on the frontage road (west). Drive 1.4 miles, turn left, and go through the locked gate (combo from Anshutz Ranch). Go 0.6 miles and turn off to the right through the gate next to the corral. Go 1.5 miles to a gate and proceed 0.3 miles from the gate to a fork. Turn right and drive 0.25 miles to a witness post on the right hand (west) side of the road. From the witness post walk 90 paces at 282 degrees magnetic to the 0-foot baseline stake, marked by browse tag #53. The baseline runs 177 degrees magnetic.





Map Name: Castle Rock Diagrammatic Sketch

Township 4N , Range 6E , Section 13 UTM 4546607 N 481092 E

DISCUSSION

Trend Study No. 6-12

The Stag Canyon study was established in 1996 over concerns of elk use on an old burn. The site has an easterly aspect at an elevation of 6,600 feet. Slope varies from 10-15%. The location of the site was determined by the number elk pellet groups. In 1996, the study area had a pellet group quadrat frequency of 47% for elk, 10% for deer, and 6% for cattle. A pellet group transect read on the site in 2001 estimated 60 elk days use/acre (149 edu/ha), 15 deer days use/acre (36 ddu/ha), and 11 cow days use/acre (27 cdu/ha). Most of the elk pellet groups appeared to be from late winter, while deer pellets were more recent from spring and early summer. Adequate juniper thermal cover is a short distance up the ridge from the site.

Soil texture is classified as sandy clay loam with a slightly alkaline soil reaction (7.4 pH). There is little surface rock (<4%), but there is considerable rock throughout the profile. Average soil temperature was estimated at almost 71° F (at nearly 10 inches in depth), indicating that the site is quite dry and warm during the summer. Litter and vegetative cover values are below average when compared to other sites within the management unit. Bare soil was high at 34% in 1996, increasing to 45% in 2001. There are some signs of minor sheet erosion, but it is limited by the moderately gentle slopes. Even with abundant bare soil, soils appear stable for the most part.

The browse composition consists primarily of mountain big sagebrush and stickyleaf low rabbitbrush. Mountain big sagebrush provided 57% of the browse cover in 1996, increasing to 64% in 2001. The sagebrush population exhibited characteristics of an expanding population in 1996 with a biotic potential of 38% (percentage of seedlings to the population) and a young age class that made up 71% of the population. In 2001, density did increase by 10% to an estimated 5,720 plants/acre. Young plants continue to be abundant in 2001, making up 20% of the population. Most of the young plants occur in the more open areas throughout the site. Sagebrush exhibits very low percent decadence, light use, and normal vigor. Average leader growth on big sagebrush was less than 2 inches in 2001. Increaser species make up the remainder of the browse including stickyleaf low rabbitbrush, broom snakeweed, and prickly pear.

The herbaceous understory is marginal on this site, and best characterized as weedy. The major problem in 1996 was that three species, cheatgrass, thistle, and flannel mullein contributed 64% of the total herbaceous cover. In 2001, all three of these species significantly decreased in nested frequency. Elk will tend to congregate on areas with weedy forbs and select them in the spring. In 2001, sum of nested frequency for perennial grasses slightly increased, while that of perennial forbs drastically decreased. However, the loss of perennial forbs was mostly to the decline in thistle and mullein. Musk thistle was very thick on the road and surrounding meadows coming into the site in 2001.

1996 APPARENT TREND ASSESSMENT

Soils appear stable, but are in only fair condition. Bare ground is abundant, while herbaceous vegetation and litter cover are only marginal. Browse trend appears to be improving with abundant seedling and young sagebrush. Use is light and no decadent plants were sampled. The herbaceous understory is best characterized as weedy. Cheatgrass, thistle, and mullein are the dominate species.

2001 TREND ASSESSMENT

Trend for soil is stable, but remains in only fair condition. Although percent bare ground increased, vegetation and litter cover stayed fairly stable. The nested frequency ratio of bare soil to protective cover (vegetation, litter, and cryptogams) remained at 1:2.3, the same as in 1996. A soil condition class assessment

also determined soils to be stable at the present time. Trend for browse is up. Mountain big sagebrush increased in density, has low decadence, light use, and normal vigor. Young plants remain abundant in the population as well. Trend for the herbaceous understory is stable overall, but remains in poor condition. Although perennial forbs had a drastic decrease in sum of nested frequency, perennial grasses actually increased. Most of the loss in the perennial forb component was due to the decline in two species, thistle and mullein. The significant decline in cheatgrass frequency is also a positive aspect on this site.

TREND ASSESSMENT
soil - stable (3)
browse - up (5)
herbaceous understory - stable but in poor condition (3)

HERBACEOUS TRENDS --
Herd unit 06 , Study no: 12

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
G	Agropyron dasystachyum	78	91	18	27	2.58	2.12
G	Agropyron spicatum	11	11	6	4	.18	.19
G	Bromus tectorum (a)	272	*154	80	56	4.43	1.85
G	Elymus cinereus	5	5	1	1	.03	.41
G	Oryzopsis hymenoides	57	64	21	26	2.05	1.42
G	Poa fendleriana	-	2	-	1	-	.00
G	Poa pratensis	14	*34	4	11	.45	1.35
G	Poa secunda	10	8	4	4	.12	.05
G	Stipa comata	15	14	6	5	.34	.42
Total for Annual Grasses		272	154	80	56	4.43	1.85
Total for Perennial Grasses		190	229	60	79	5.77	5.99
Total for Grasses		462	383	140	135	10.21	7.84
F	Alyssum alyssoides (a)	103	*342	39	93	.27	3.48
F	Allium spp.	-	2	-	1	-	.00
F	Arabis spp.	2	-	1	-	.00	-
F	Astragalus convallarius	3	9	1	4	.00	.07
F	Astragalus spp.	-	1	-	1	-	.15
F	Astragalus utahensis	2	-	2	-	.03	-
F	Cirsium undulatum	144	*32	59	15	4.98	.51
F	Collomia linearis (a)	-	4	-	1	-	.00
F	Collinsia parviflora (a)	18	*6	10	2	.07	.01
F	Cordylanthus ramosus (a)	1	*19	1	8	.03	.58
F	Epilobium brachycarpum (a)	1	-	1	-	.00	-
F	Erigeron pumilus	3	2	1	1	.00	.00
F	Gayophytum ramosissimum (a)	-	2	-	2	-	.01

Type	Species	Nested Frequency '96	Nested Frequency '01	Quadrat Frequency '96	Quadrat Frequency '01	Average Cover % '96	Average Cover % '01
F	Gilia spp. (a)	-	4	-	1	-	.00
F	Holosteum umbellatum (a)	5	-	2	-	.01	-
F	Lithospermum spp.	-	-	-	-	-	.00
F	Machaeranthera spp	-	1	-	1	-	.15
F	Microsteris gracilis (a)	-	4	-	1	-	.00
F	Phlox longifolia	42	*19	18	9	.19	.09
F	Polygonum douglasii (a)	26	*-	11	-	.05	-
F	Ranunculus testiculatus (a)	5	3	3	1	.01	.00
F	Sisymbrium altissimum (a)	1	-	1	-	.00	-
F	Sphaeralcea coccinea	26	*9	12	5	.28	.05
F	Tragopogon dubius	6	-	2	-	.01	.00
F	Unknown forb-perennial	2	-	1	-	.03	-
F	Verbascum thapsus	59	*17	28	8	2.33	.32
Total for Annual Forbs		160	384	68	109	0.46	4.10
Total for Perennial Forbs		289	92	125	45	7.88	1.37
Total for Forbs		449	476	193	154	8.34	5.48

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 06 , Study no: 12

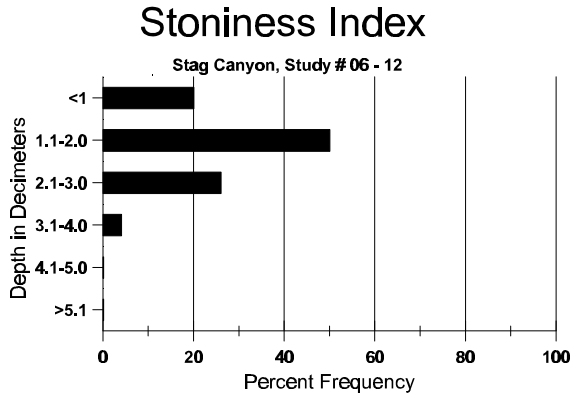
Type	Species	Strip Frequency '96	Strip Frequency '01	Average Cover % '96	Average Cover % '01
B	Artemisia tridentata vaseyana	66	74	9.56	11.69
B	Chrysothamnus viscidiflorus viscidiflorus	59	61	5.48	5.69
B	Gutierrezia sarothrae	35	27	1.61	.86
B	Opuntia spp.	3	3	.15	.03
Total for Browse		163	165	16.80	18.27

BASIC COVER --
Herd unit 06 , Study no: 12

Cover Type	Nested Frequency		Average Cover %	
	'96	'01	'96	'01
Vegetation	405	406	33.05	32.68
Rock	202	112	1.72	1.37
Pavement	264	336	2.63	5.55
Litter	494	457	40.31	36.14
Cryptogams	4	18	.04	.24
Bare Ground	386	391	34.56	45.35

SOIL ANALYSIS DATA --
Herd Unit 06, Study no: 12, Stag Canyon

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.8	70.8 (9.7)	7.4	47.3	26.7	26.0	2.9	11.9	169.6	.7



PELLET GROUP FREQUENCY --
Herd unit 06 , Study no: 12

Type	Quadrat Frequency		Pellet Transect	
	'96	'01	Pellet Groups per Acre ⁄01	Days Use per Acre (ha) ⁄01
Rabbit	3	5	35	N/A
Elk	47	9	783	60 (149)
Deer	10	13	191	15 (36)
Cattle	6	4	131	11 (27)

BROWSE CHARACTERISTICS --
Herd unit 06 , Study no: 12

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	96	98	-	-	-	-	-	-	-	-	98	-	-	-	1960			98
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	96	182	-	-	-	-	-	-	-	-	182	-	-	-	3640			182
	01	83	-	-	-	-	-	1	-	-	84	-	-	-	1680			84
M	96	68	4	1	-	-	-	-	-	-	72	-	1	-	1460	33	40	73
	01	188	7	-	-	-	-	-	-	-	195	-	-	-	3900	30	35	195
D	96	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	01	7	-	-	-	-	-	-	-	-	6	-	-	1	140			7
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	660			33
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	02%	.78%	.39%	+10%
'01	02%	00%	.34%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	5120	Dec:		0%
'01	5720			2%

Chrysothamnus viscidiflorus viscidiflorus																		
S	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	96	111	3	1	8	-	-	-	-	-	123	-	-	-	2460	11	23	123
	01	143	-	-	9	-	-	-	-	-	141	11	-	-	3040	9	21	152
D	96	3	3	-	-	-	-	-	-	-	6	-	-	-	120			6
	01	21	-	-	-	-	-	-	-	-	14	-	-	7	420			21

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	05%	.75%	00%	+24%
'01	00%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	2660	Dec:		5%
'01	3480			12%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
Y	96	28	-	-	-	-	-	-	-	-	28	-	-	-	560			28
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	96	126	-	-	-	-	-	-	-	-	126	-	-	-	2520	7	10	126
	01	89	-	-	-	-	-	-	-	-	89	-	-	-	1780	7	11	89
D	96	-	-	-	2	-	-	-	-	-	2	-	-	-	40			2
	01	3	-	-	-	-	-	-	-	-	-	-	-	3	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	00%	00%	00%	-41%
'01	00%	00%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	3120	Dec:		1%
'01	1840			3%

Opuntia spp.																		
M	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100	5	8	5
	01	7	-	-	-	-	-	-	-	-	7	-	-	-	140	4	10	7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	00%	00%	00%	+29%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	100	Dec:		-
'01	140			-

Purshia tridentata																		
M	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	10	63	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	0	Dec:		-
'01	0			-